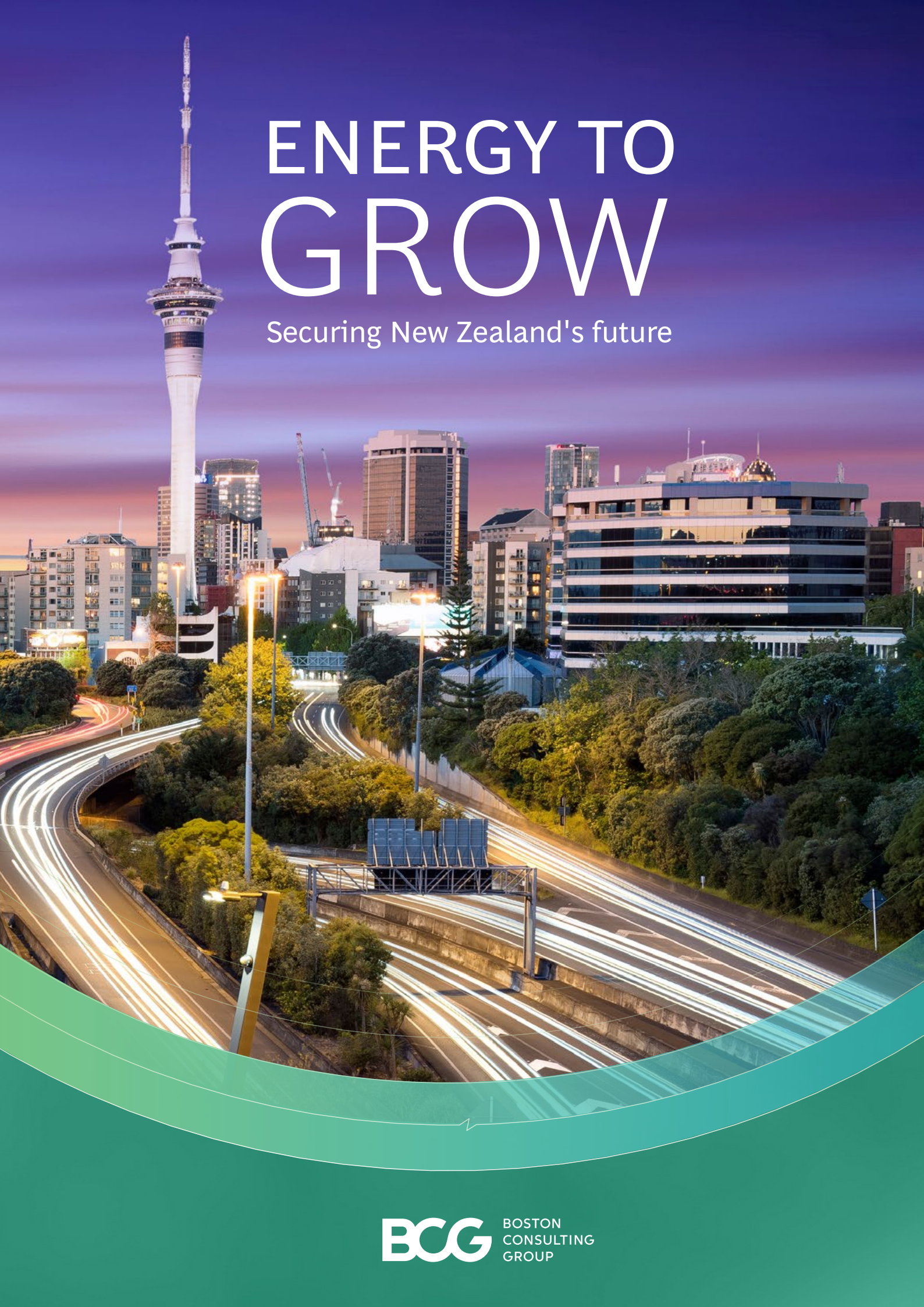




ENERGY TO GROW

Securing New Zealand's future

New Zealand's energy system is at a critical inflection point

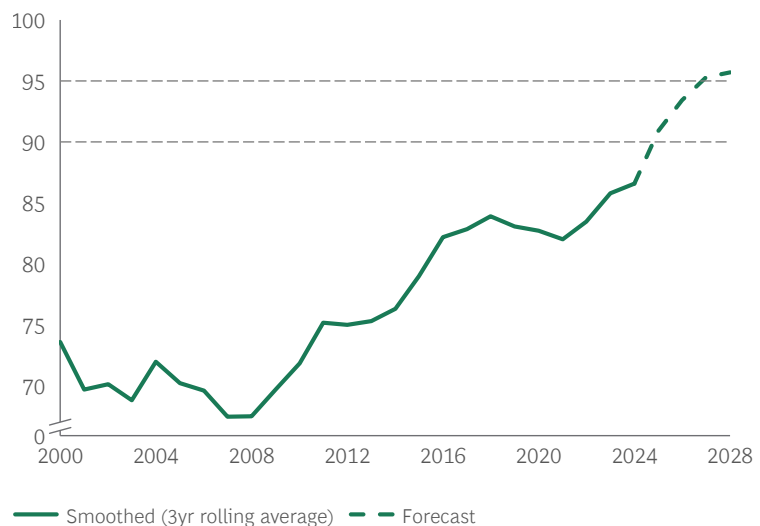


Since the publication of *The Future is Electric* by BCG in 2022, New Zealand's electricity industry has made strong progress. Renewable generation has increased to nearly 90% of total electricity supply and new technologies like grid-scale batteries have been deployed. With momentum in the renewable generation pipeline, the share of electricity supply provided by hydropower (hydro), wind, solar and geothermal is expected to exceed 95% by 2027. This puts the electricity industry on track to deliver the preferred decarbonisation pathway in the 2022 report, *Smart System Evolution*.

This strong progress has ensured **New Zealand's energy system remains one of the best in the world, ranked 9th globally and 1st in Asia by the World Energy Council for its combined affordability, security and sustainability.**¹

The share of electricity generation from renewable sources is forecast at 90% for 2025 and is on track to reach 95% by 2027

Renewable electricity generation
(% of total electricity supply, 2000–2028F)



Source: MBIE Annual Electricity Statistics, BCG Forecast Analysis

¹ World Energy Council, *World Energy Trilemma Index 2024*, 2023

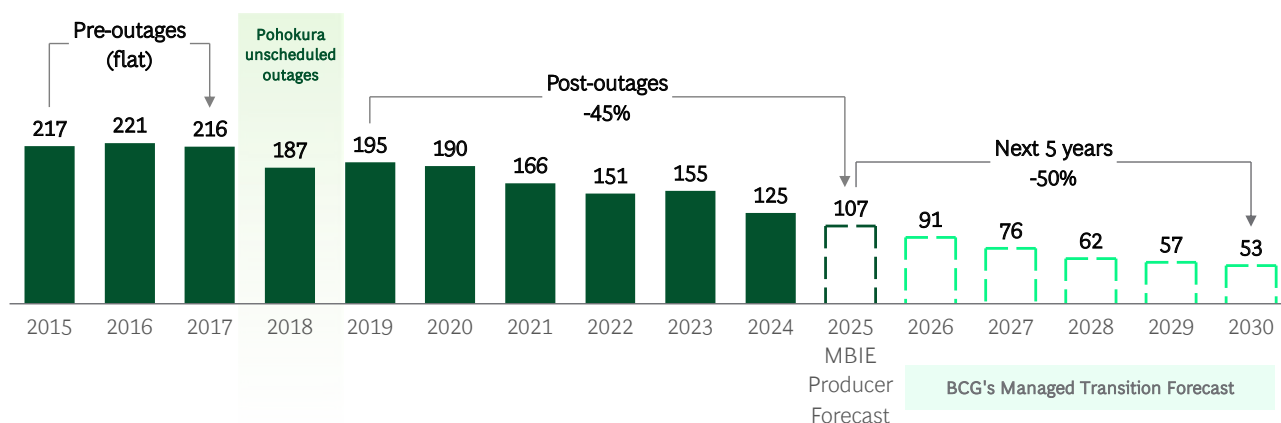
Despite this progress, **a rapid decline in gas production of 45% over the last six years has exposed weaknesses in the wider energy sector**, impacting affordability and security. The faster-than-expected drop in domestic production has left New

Zealand, which does not currently have any liquified natural gas (LNG) import capability, fully reliant on its limited domestic supply. This gas supply crunch has continued in 2025 for industrial users, with domestic gas production forecast to halve again in the next five years.

Gas production has fallen 45% in last six years and could halve again in the next five years

Gross gas production and recent production forecasts

(Gross PJ, calendar year)

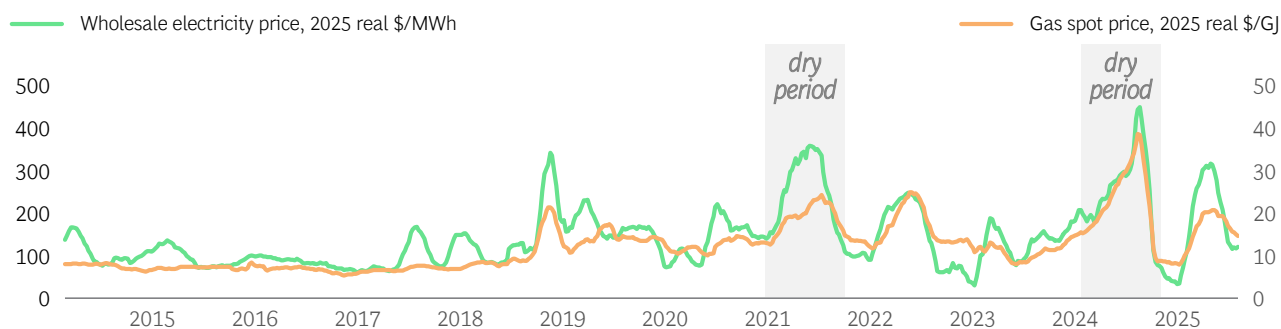


Source: MBIE Annual Gas Production and Consumption 2025 Q1, MBIE Gas Production Profile (Forecast)

Dry conditions in 2024 led to elevated prices across electricity and gas

Wholesale electricity and gas spot price relationship

(Trailing 8-week average)



Source: EMI Electricity (Otahuhu node), EMS Gas Spot prices (including carbon)

Affordability and security were especially stretched in 2024 when a dry year reduced hydro generation.

With less hydro generation, New Zealand needed more gas to produce electricity, but gas availability challenges caught the market by surprise and led to both high spot gas and electricity prices. Today, the wholesale electricity price is highly exposed to gas prices – gas generation is under 10% of total electricity supply yet influences wholesale electricity prices 70–90% of the time.

New Zealand's situation is not unique; many developed countries are facing security and affordability challenges in the clean energy transition, but New Zealand's hydro and geothermal resources offer a distinct advantage.

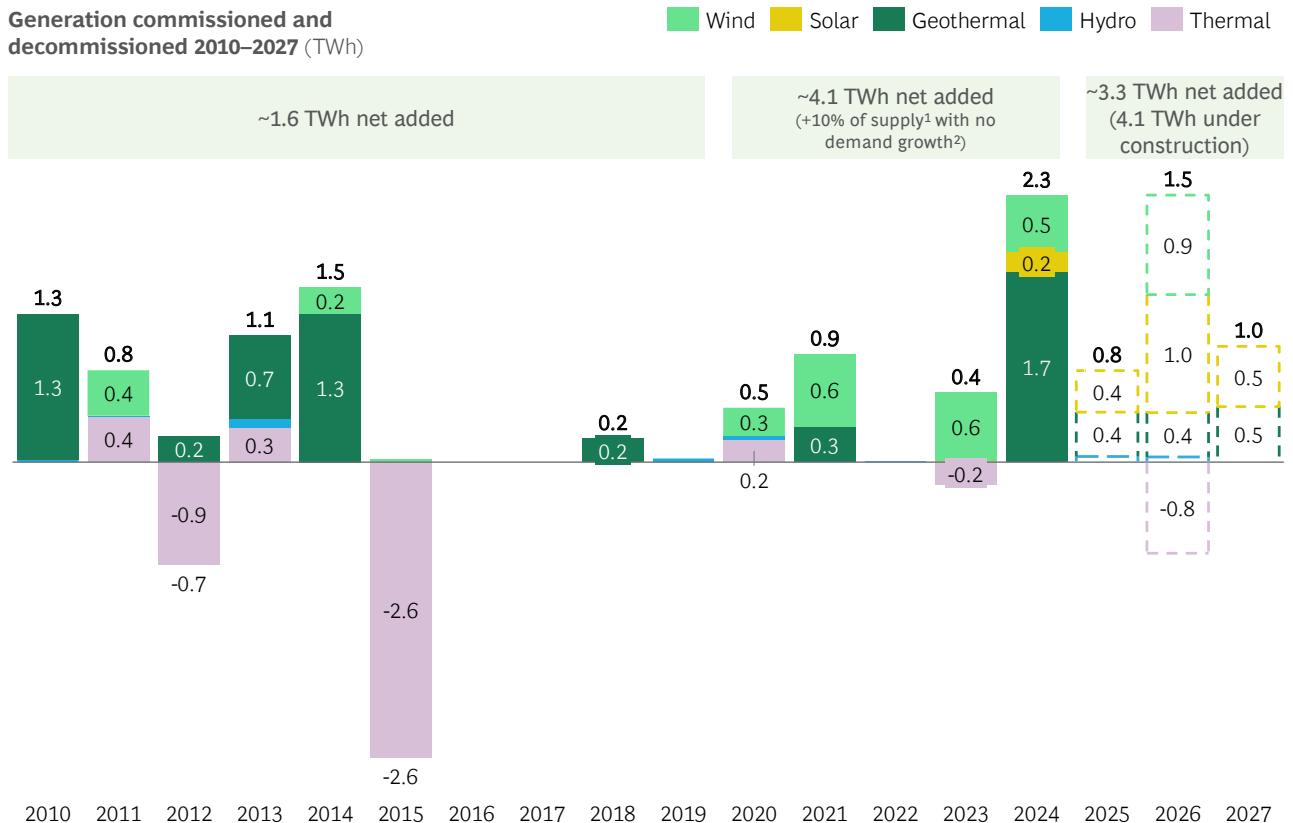
The abundance of these resources can underpin a competitive advantage for New Zealand by retaining and attracting energy intensive industries seeking low-carbon, secure and price competitive electricity, including emerging industries such as data centres.

The country is also developing new renewable generation at the fastest rate ever. Having more renewable generation will reduce the number of periods that gas sets the electricity price as the marginal

producer. It will also reduce the electricity industry's demand for gas by 70% in 2030 (from 30 PJ in 2024 to 9 PJ in 2030).

Significant new renewable generation has recently been commissioned or is under construction

Generation commissioned and decommissioned 2010–2027 (TWh)



1. 10% of the total electricity supply of 44.0 TWh in 2024 2. Demand was 39.6 TWh in 2024 down 0.9 TWh from 2015 when it was 40.3 TWh
 Note: Figures may not add due to rounding; Assumes Taranaki Combined Cycle (TCC) closure in 2026
 Source: Concept Consulting, Transpower, BCG Analysis

However, New Zealand needs more affordable firming to complement these renewables. While the electricity industry has substantially increased winter fuel stores for firming (storing gas, solid fuel and some diesel), New Zealand remains highly exposed to increasing gas prices. Even with renewables catering to 98% of New Zealand's electricity needs, gas will still set the price of electricity 25–35% of the time.² Furthermore, unlike gas, solid fuels are sometimes not able to start fast enough to provide firming for intermittent renewables during demand peaks.

There is a way through this near-term energy crunch but it requires bold and decisive action.

New Zealand can fix its domestic gas market, increase the diversity and storage of backup fuel for dry electricity periods, and continue to build renewables at the current pace beyond 2027.

With this action, New Zealand can come out the other side with affordable and secure renewable energy. This can be a competitive advantage for the country – leveraging its hydro, geothermal and other renewables to stimulate increased economic growth.

² New Zealand's wholesale market price is set by the last generator needed to meet demand (the marginal unit), and in many peak/low-renewables hours that unit is gas; therefore, gas often sets the price.

New Zealand has the opportunity to address its short-term energy crunch while laying the foundations for a prosperous future

By strengthening its gas market, securing backup fuel for electricity and continuing to build renewables at pace, New Zealand can lower wholesale electricity prices. In our Managed Transition Scenario, wholesale electricity prices decline from \$160 per MWh today to \$140 per MWh in 2027 (in today's dollars), and \$100–120 per MWh in 2030.

To strengthen the domestic gas market, the government and energy sector can look to actions across supply, demand and storage. To reduce the imbalance between gas supply and demand, the most effective actions are to accelerate drilling efforts in existing fields and support users to transition an incremental 10 PJ of gas to biomass and electricity by 2030, on top of ongoing and planned conversions.

In addition, the energy sector should take steps to secure backup thermal fuels to more affordably replace the reduction in hydropower during dry periods. Options include new gas storage, imported LNG and alternative liquid fuels (condensate or diesel). New Zealand has enough solid fuel in storage to mathematically produce enough energy in a dry year, but solid fuel power plant capacity alone cannot meet all demand at peaks – hence gas, and potentially liquid fuels, are also required. While batteries are essential for hours-scale balancing and addressing price spikes, they can't economically cover multi-week dry periods; they complement, rather than replace, seasonal firming.

It is highly preferable for New Zealand to have a well-functioning domestic gas market, rather than one that relies heavily on imported LNG. Despite this, LNG may still be a prudent backstop if gas supply continues to decline rapidly. While LNG provides reliable supply of gas, it is more expensive than a combination of new gas storage and liquid fuels for electricity and may take longer to develop. New LNG infrastructure would cost \$400–800 million, excluding fuel costs, while infrastructure for gas storage and condensate or diesel would be \$150–300 million. The average domestic spot gas price for the last 12 months

Three levers to fix the domestic gas market



Supply

Need to **turn around rapid rate of decline** in supply and consider LNG



Demand

Even with some supply turnaround, some demand may need to **exit or switch to other fuels**



Flexibility

More **gas storage** needed to reduce volatility

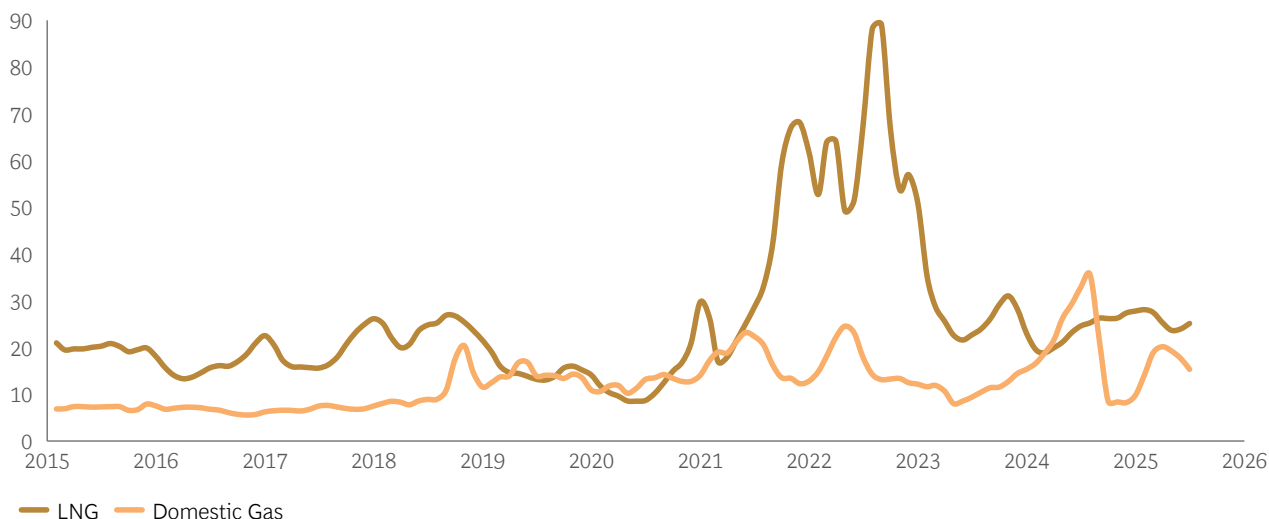
was \$16–18 per GJ (including carbon), while landed LNG would have been \$25 per GJ (including carbon). This does not necessarily mean that LNG should not be pursued – it could be a valuable insurance policy against further gas supply decline and a backstop to a well-functioning domestic gas market. If LNG is pursued, it is still important to pull all levers to strengthen the domestic gas market, as this will deliver more affordable average gas prices.

If the electricity industry continues to build renewables at today's pace, it will increase renewable generation to 95% by 2027 and 98% by 2030, and when paired with more reliable firming for dry years, it will support lower wholesale electricity prices. A higher percentage of renewables decreases the percentage of time that gas sets the wholesale electricity price from 70–90% today, to 50–60% in 2027 with 95% renewables, and 25–35% in 2030 with 98% renewables.

Over-reliance on LNG imports could lead to higher average gas prices and expose New Zealand to global price shocks

EMS gas spot price (including carbon) versus LNG total marginal cost (including carbon and regas)

Trailing 8-week average (real \$/GJ)



Note: LNG import parity price based on JKM LNG index and adds in carbon cost and regas variable; does not include amortised CAPEX to build LNG import terminal in New Zealand

Source: EMS Tradepoint, Concept Consulting, Platts JKM (Japan Korea Marker) LNG benchmark, IEA 2025 JKM Spot Prices

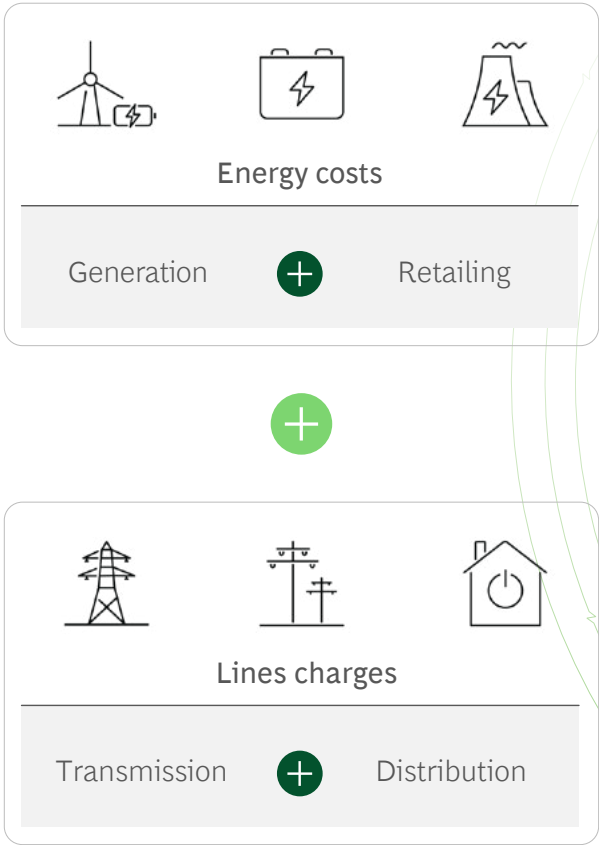
“Regardless of how stakeholders weigh sustainability, the rapid build of renewables and the transition of gas users to electricity and biomass are a large part of the answer for achieving security and affordability”

If these items are delivered (a strengthened domestic gas market, increased backup fuel, and continued pace of renewable development), industrial electricity prices should reduce through to 2030, supporting competitiveness and economic growth. This will be delivered via a reduction in energy costs measured in today's dollars, which represent approximately 80% of industrial consumers' bills.

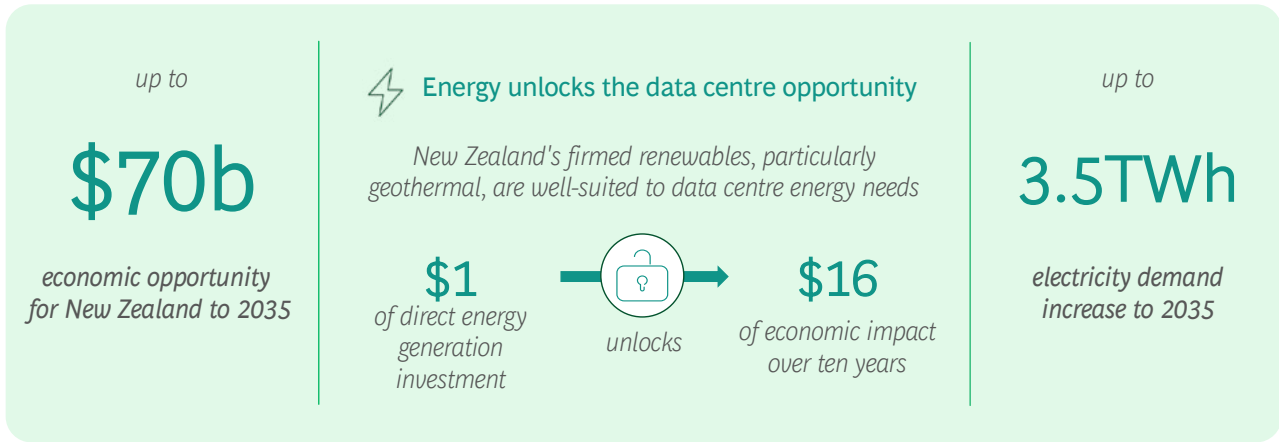
Even if these measures are successfully implemented, retail prices for residential consumers are likely to increase through to 2030 due to rising transmission and distribution charges. Line charges represent 35–45% of final household bills and will increase by 25–35% between now and 2030 in today's dollars, with inflation to come on top. The regulated revenue increments underpinning these higher line charges have already been locked into Commerce Commission price paths. These substantial increases in lines charges will only be offset in part by lower energy costs as wholesale electricity prices fall. Beyond 2030, residential price growth may steady if networks can improve efficiency and if interest rates are lower than in 2024.

A stronger domestic energy market will lay the foundation to capitalise on an economic opportunity of up to \$70 billion in data centres to 2035. New Zealand's energy resources – particularly geothermal – are perfectly matched to provide 24/7 renewable power, which could underpin the country's next major export industry. To unlock this economic potential, New Zealand would need to adopt an energy abundance mindset – where the conversation shifts from why not, to how the sector collectively delivers an abundance of firmed, renewable energy for the future.

Even if measures reduce energy costs, households face rising bills due to the schedule of regulated lines charge increases to 2030



Data centres present a significant economic opportunity enabled by renewable power



Policy, market and regulatory actions to deliver on New Zealand's secure energy future

The following actions across five priority areas, to be considered alongside other national initiatives, will help New Zealand create a policy, regulatory and market environment that facilitates the delivery of a more affordable and secure domestic energy system. The list presented here is an abridged summary, of the more than 20 specific recommendations in the full report. The list below includes what it would take to achieve each recommendation and who would be responsible.

★ Top priority

PRIORITY 1

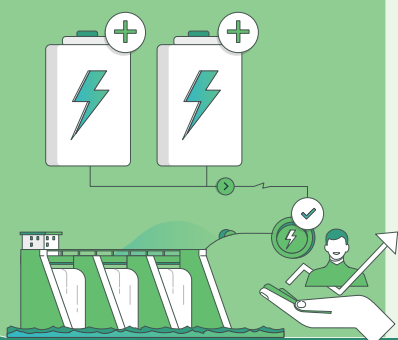
Accelerate renewable electricity generation development



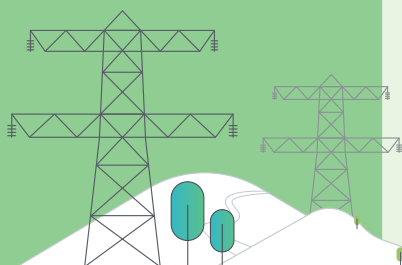
- ★ **Build renewables at pace.** Renewable generation developers would need to reach regular Final Investment Decisions that allow renewables to continue to come online from 2028 to 2030.
- **Deliver faster consenting.** The Environmental Protection Authority and Ministry for the Environment would need to continue to support and improve the fast-track consenting mechanism to ensure it expedites infrastructure delivery.
- **Improve pipeline information.** The Electricity Authority (EA) would need to ensure there is one source of truth that captures all electricity generation and storage work in New Zealand.

PRIORITY 2

Strengthen the electricity market and security mechanisms



- ★ **Investigate firming market designs that provide security for peaks and longer-period events.** The EA could consider a new market, the Sustained Reserve, and / or revisions to existing reserve markets to grow reserve volumes. For example, the Sustained Reserve would provide 2–4 hours of sustained support when the grid is under stress, shoring up security and increasing incentives to invest in new firming (e.g. batteries and other longer duration capacity).
- ★ **Investigate industry, regulatory and market actions to affordably meet dry periods.** Options include the EA strengthening information and regulation, gentailers (or a subset of gentailers) establishing a Gas Strategic Reserve Agreement, or the introduction of new incentives to develop fuel storage and diversify fuels.
- **Get the most out of existing hydro.** If sufficient actions to affordably meet dry periods are taken, Transpower and the EA can enable open access to 300 GWh of contingent hydro. For the new contingent hydro storage level of 532 GWh, Transpower and the EA would need to provide more predictable and earlier access to this storage. Gentailers would work with consenting authorities and key stakeholders to operate existing lakes higher and lower than today.

PRIORITY 3**Enhance lines infrastructure efficiently**

- **Provide a bold vision for grid development to 2050.** Transpower would need to ensure the Te Kanapu Grid Blueprint enables increased generation and electrification for years to come.
- **Commence productivity benchmarking for lines companies.** The Commerce Commission could set up this benchmarking to increase efficiency in spend.
- **Move to a trailing average approach for weighted average cost of capital.** The interest rates used to set revenue for lines companies are based on a 'point in time' approach. By setting a trailing average approach, the Commerce Commission would enable smoother revenues for lines companies and more stable bills for customers, supporting consumer affordability and investment signals.

PRIORITY 4**Address gas supply decline and introduce domestic gas alternatives**

- **Ensure the 'Gas Security Fund' funding model addresses drilling risk and weights focus to near-term gas supply.** This could involve government running a competitive tender process for development well drilling and CO2 scrubbing projects that provide additional gas supply in the near term.
- **Double effective gas storage.** Industry participants (e.g. gentailers) would pursue a combination of more gas storage and potentially condensate or diesel, in line with actions to affordably meet dry periods.
- ★ **Explore alternative thermal fuels.** The sector and government could consider LNG, condensate, diesel or biomass as a replacement for domestic gas when availability is scarce and prices are high. This would involve accelerating early planning and permitting works to enable LNG imports, creating the option to commit to this pathway quickly if required.

PRIORITY 5**Enable gas users to transition**

- ★ **Establish a \$100–200 million Industry Resilience Fund.** The fund would need to be spearheaded by the government and the Energy Efficiency and Conservation Authority (EECA) and establish a competitive reverse auction to support users to transition to biomass and electricity at the lowest cost per GJ bid.
- ★ **Increase public awareness.** Government, via EECA could provide information to the public about the energy transition and bring them on the journey, shaping the expectations and speed of commercial and residential electrification. This has been important for other nations navigating the transition.

LNG SPOTLIGHT

Create optionality for LNG imports by accelerating preparations

Modelling demonstrated that imported LNG delivers New Zealand energy security, both for domestic gas users to protect against de-industrialisation and for electricity generation in a dry year, but this security comes at a higher cost than alternative options. It is therefore recommended that LNG is kept in the mix as a future option in the event of ongoing domestic gas supply and demand imbalances. Even if government and the energy sector deliver all recommendations to strengthen the domestic gas market, there is still a chance New Zealand will require LNG in time.

Ensuring New Zealand has the option to pursue LNG in the future would require government and the energy sector to develop an LNG business case, conduct engineering feasibility studies and commence permitting works. These are relatively low-cost activities and can be completed in parallel with other recommendations to strengthen the domestic gas market. With this, government and the sector can make an informed decision based on updated domestic gas supply-demand knowledge and refined estimates of LNG cost, timeline and scale.



If LNG is pursued, key facility and market design choices will minimise costs to energy users and ensure the solution meets the needs of New Zealand's energy system:

- **Minimise times the gas market reaches import price parity.** Deliver a robust domestic gas market so prices only move to LNG price parity in the short periods LNG is required.
- **Implement a single price hub for gas and LNG** to maximise efficiency of price signals – do not split domestic gas and LNG access across users.
- **Set up a full-scale 4 PJ LNG facility** to match standard vessels, provide better access to fuel and hedging and risk products, and better match import volumes with seasonal demand requirements. This would avoid a small-scale and therefore bespoke LNG solution which would require fortnightly imports, increasing duration of import price parity and taking longer to implement.
- **Purchase call options (options to buy) or re-sell unneeded cargoes** where feasible so LNG is only imported when needed and the cost of risk management is minimised.
- **Adopt a broad-based fuel security levy across both gas and electricity users to recover the LNG fixed costs.** Treat LNG as a system-wide insurance policy, with costs socialised rather than borne by individual users. Under a broad-based levy, these costs would be around \$0.5 per GJ, compared with \$5–22 per GJ if recovered through the marginal fuel price which would make LNG cost prohibitive.

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Basis of preparation

Boston Consulting Group (BCG) was commissioned by the four largest New Zealand gentailers (Contact Energy, Genesis Energy, Mercury and Meridian Energy) to write this independent report for the benefit of the sector. This report reflects the independent views of BCG, and not the commissioning parties.

RSM has provided probity assurance to ensure that the report is held to the highest standard of independence and integrity. This includes attending meetings between BCG and sector participants and confirming that changes made to the draft report are based on facts and not subjective interpretation.

Concept Consulting conducted the quantitative modelling of scenarios used in this report. BCG has drawn on this modelling and other data sources to produce insights, conclusions and recommendations.

